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09/693,117	10/20/2000	Lynn David Bollinger	03371-P0005A LHR	7816

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EXAMINER

WILCZEWSKI, MARY A

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/693,117**

Applicant(s)  
**Bollinger et al.**

Examiner  
**Mary Wilczewski**

Art Unit  
**2822**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on March 28, 2002 and January 23, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-22 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec 11, 2000 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4, 6, 7 6) ☐ Other:

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### **DETAILED ACTION**

This Office action is in response to Preliminary Amendment A filed on March 28, 2002, and Preliminary Amendment B filed on January 23, 2003.

#### ***Drawings***

The formal drawings filed on December 11, 2000, are acceptable.

#### ***Response to Amendment***

The amendment filed March 28, 2002, is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: It is not readily apparent to the Examiner that the amendments to the specification were necessary to correct mathematical errors, hence, these amendments are considered new matter. Applicant is invited to show that these amendments merely correct mathematical errors and do not introduce new matter into the originally-filed specification.

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***Claim Rejections - 35 USC § 112, First Paragraph***

Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The equation in claim 3 has been amended after the filing of the application in order to correct mathematical errors. It is not readily apparent to the Examiner that this amendment actually corrects a mathematical error, accordingly, this amendment to claim 3 is considered new matter. Applicant is invited to show that this amendment merely corrects a mathematical error.

***Claim Rejections - 35 USC § 112, Second Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim from which claim 7 is to depend has been inadvertently omitted from line 1 of the claim. For the purpose of the Office action, it has been presumed that claim 7 should depend from claim 1.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 5, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siniaguine et al., WO 97/45856, cited by Applicants.

Siniaguine et al. disclose a method for rapid thermal processing of a substrate in which a substrate is moved through a hot gas stream at a velocity which results in a temperature differential formed throughout the thickness of the substrate, see the abstract and pages 4-10. It is noted that the claims merely require the temperature of the hot gas stream to be "substantially above" the substrate surface temperature, but do not expressly recite any specific temperatures. It is apparent from the mathematical equations in the Siniaguine et al. patent that the temperature of the gas stream is higher than the substrate surface temperature. Since the temperature of the gas stream used in the method of Siniaguine et al. is higher than the substrate surface temperature, the instant claims are not deemed to patentably distinguish the claimed method from that of Siniaguine et al.

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Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siniaguine et al. as applied to claim 1 above, and further in view of Siniaguine, WO 97/45862, cited by Applicants.

Siniaguine et al. is applied as above. Siniaguine et al. lack anticipation only of using a substrate holder of the non-contact vortex type. Siniaguine 97/45862 disclose a non-contact vortex holder for wafer-like substrates which avoids physical contact between the wafer-like substrate and the holder thereby eliminating mechanical stress on the substrate while it is being held. Siniaguine further discloses that the holder is particularly suited for use in apparatuses using a reactive gas generated by an electrical discharge, see pages 1, 2, and 11. Therefore, in light of the disclosure of Siniaguine, it would have been obvious to one skilled in the art that the substrate holder of Siniaguine could have been used in the known method of Siniaguine et al. to prevent any mechanical stress to the substrate while it is held.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siniaguine et al. as applied to claim 1 above, and further in view of Zorina et al., U.S. Patent 5,474,642, cited by Applicants.

Siniaguine et al. is applied as above. Siniaguine et al. lack anticipation only of the power density of the hot gas stream. Zorina et al. disclose an apparatus for treating a substrate with a hot gas stream, see the abstract and Figures 1 and 6. Zorina et al. disclose that the apparatus can be operated at a power density of approximately  $10^7$  W/m<sup>2</sup>, see column 2, lines 30-50. Since the apparatus of Zorina et al. is similar to that of Siniaguine et al., it would have been obvious to one

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skilled in the art that the power density of the gas stream used in the apparatus of Zorina et al. could have been used in the operation of the apparatus of Siniaguine et al.

*Allowable Subject Matter*

Claims 11-22 are allowable over the prior art of record.

Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the references of record disclose a method of processing a substrate with a hot gas stream having a power density above about  $5 \times 10^7 \text{ W/m}^2$  wherein the stream has a cross-sectional area less than the surface area of the substrate to be treated by the hot gas stream. Concerning claim 22, none of the references of record disclose a substrate etching method for removing a polymer from the substrate by directing a gas stream having a heat flux in the range of  $10^6$  to  $10^7 \text{ W/m}^2$  on the substrate surface.

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*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited references disclose various apparatuses and methods of processing substrates using a gas stream or jet.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (703) 308-2771.



M. Wilczewski  
Primary Examiner  
Tech Center 2800

MW  
June 2, 2003